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THE UNIVERSITY OF ALBERTA

EFFECTS OF LEVEL OF TEACHER EMPATHY AND WARMTH ON THE DEVELOPMENT OF STUDENT CREATIVITY

by

© MARGARET ANN FORRESTER

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Effects of Level of Teacher Empathy and Warmth on the Development of Student Creativity, submitted by Margaret Ann Forrester in partial fulfilment of the requirements for the degree of Master of Education.

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Abstract

Having reviewed the literature dealing with aspects of the environment allegedly conducive to creativity development in the classroom, the dimensions of teacher empathy and warmth were selected against which to examine changes in student creativity. Students of teachers who responded in an empathic or warm manner on the Carkhuff Communication Index were compared with students of teachers who scored toward the lower end of the continuum on these dimensions. The null hypothesis, that no significant differences would occur in magnitudes of change in the students' performance on the Wallach-Kogan creativity measures, was tested. An exploratory investigation was also conducted to determine if an open area team teaching or a self-contained classroom approach was more conducive to development of creativity when empathy and warmth were statistically controlled.

Subjects were 434 grade five students from heterogeneous classes in middle class socio-economic areas, and their 16 teachers from the Edmonton Public School Board. Students completed pre-test Wallach-Kogan creativity measures (subtests Names and Similarities) in late October or early November, at which time their teachers also filled out the Carkhuff Communication Index, open-ended version. The post-test creativity measure, identical in content and format to the pre-test, was administered to the students in late March or early April after a period of approximately five months contact with their teacher.

Teacher responses were rated for empathy and warmth by two independent judges using the Truax scales. The Wallach-Kogan creativity measures were rated for fluency (total number of ideas) and uniqueness (number of ideas which occurred less than 1% of the time) using the

method described by Wallach and Kogan (1965) and all the pre-test protocols as norms.

Inter-judge reliability was found to be satisfactory. Open area team and self-contained classroom teachers did not differ significantly on level of empathy and warmth.

The students of the two highest-scoring teachers on empathy, and the students of the two lowest-scoring were compared using an analysis of covariance, with the students' pre-test scores on the same variables as covariates. A similar analysis was done using high-warmth and low-warmth.

No significant differences were found between the high and low groups for either empathy or warmth on any of the six variables.

The exploratory comparison between open area team and self-contained class students showed no consistent differences between the two groups. Although results on two of the six variables were significant, they were in opposite directions, and are not explicable using the data presently available.

The null hypothesis was strongly indicated in this study, failing to support the speculations which have suggested that teacher empathy and warmth are aids to the development of student creativity. Some alternative explanations for the negative results include the possible need for conditions other than or in addition to teacher empathy and warmth in order to foster creativity, psychometric shortcomings involving the instrument(s) used, or the possible need for a time period longer than five months for changes to become significant. Suggestions for future research are made.

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CHAPTER 1

INTRODUCTION

The present study was designed to investigate the relationship between levels of teacher empathy and of teacher warmth and gains in creativity as manifested by their students. A quite secondary inquiry arose unexpectedly once the study was undertaken when it was found that most elementary schools are increasingly involved in team or co-operative teaching. This fact, of course, hampered the researcher in obtaining teacher-subjects who were involved in responsibility for only one classroom and hence would be in a position to have maximal influence on their students. The writer decided, however, to take advantage of these circumstances and to test out the two approaches, open area team vs. self-contained classroom teaching in terms of their possible impact on the development of creative potential.

The Importance of Creativity Research

Creativity has been recognized as a variable which is integrally related to psychological health. Many psychologists who have concerned themselves with the individual's development toward fully functioning personhood have cited creativity as one of its hallmarks (Barron, 1963; Fromm, 1947, 1956, 1964; Koestler, 1964; Maslow, 1962, 1971; May, 1953, 1969; Rank, 1947; Rogers, 1961; Schachtel, 1959) and have stressed the importance which the cultivation of creativity should assume in institutions which purport to foster human development.

These theorists have viewed creativity as a broadly applicable and generalized capacity which underlies much of human activity and through which individual existence may be extended and enhanced toward actualization of its full potential. Thus, the term may be applied to the

whole panorama of an individual's relationships with other people (Guilford, 1973), as well as to his modes of relating to, interacting with and conceiving of the nonhuman environment. Contrary to the point of view that the creative person courts insanity, or has adopted creative activities to compensate for other unmet needs evidence suggests that creativity is found most often in individuals who would be characterized as healthy in other aspects of their existence. Thus, when a person enjoys a creative relationship with the world and with other people, the ability to deal effectively with his own internal dynamics is also apparent (Dellas and Gaier, 1970).

On a broader basis, it is evident that innovators and creative thinkers are needed in human society (Toynbee, 1964). They are needed to ensure its growth and progress; they are needed to formulate solutions to the problems which have confronted man throughout history, and which continue to threaten individual lives, social systems, and the survival of the species. In our era of continuous transition and flux, where the frontiers of knowledge are rapidly receding and the complexity of problems increases geometrically, the need for the creative man, the man of vision and judgment becomes an even stronger imperative (Guilford, 1962; Osborn, 1957; Torrance, 1965).

Torrance (1962, pp. 32-33) summarizes the reasons why the cultivation of creativity is an endeavour which deserves attention and action:

> ...First, it is important from the standpoint of personality development and mental health...Secondly, there seems to be little doubt that creative thinking contributes importantly to the acquisition of information and may ultimately be demonstrated to be as important in this respect as memory and similar intellectual functions...Third, creative thinking is cer-

> tainly essential in the application of knowledge to daily personal and professional problems...Fourth, I believe that it is tremendously important to society that our creative talent be identified, developed, and utilized. The future of our civilization depends upon the quality of the creative imagination of our next generation.

Having noted the crucial importance of creativity in human development, and in social and scientific progress, it is evident that the cultivation of such a critical trait should become a superordinate principle of education. Many critiques (Harding, 1962; Lowenfeld, 1962) have been directed against education and educators for their alleged neglect of the creative abilities of their students. "Education should foster creativity" has become a position of increasing popularity, a popularity which has been accompanied by some very vague usage of the term "creativity." Although always difficult to define with precision, common utilization has rendered "creativity" a catch-all phrase used to express miscellaneous dissatisfactions with the cultural milieu in general, and the educational system in particular. Educational institutions, their curricula, and personnel have been accused of, at best, ignoring creativity as an important element of cognitive and conative functioning, and, at worst, of "stifling creativity."

Following the initial criticism and controversy, a general consensus has been established which supports the importance of creativity to human development, and the desirability of fostering it in the classroom. However, in order to realize this ideal of 'education for creativity' it will be necessary to do more than pay lip service to the value of creative activity; we need to isolate, identify, and institute the environmental conditions which prove to be instrumental in its cultivation. In this way it will be possible to plan environments which will be maximally conducive to the development of creative potential, environments in which creative modes of thinking, relating,

and behaving may flourish.

What variables in the classroom environment have a demonstrated relationship to creative functioning? As yet much of the available evidence must be regarded as tentative since it relies, to a large extent, on speculation and inference rather than on empirical data. Following is a sampling from the literature of the dimensions of the classroom situation which have been considered relevant to the development of creativity.

Environmental Conditions Assumed to Foster Creativity

Woodfin, (1968, p. 281) contends that although creativity in students and in teachers may occur under the most adverse conditions, both groups of people function more productively and more easily under conditions in which their unique contributions are valued, recognized, and encouraged. According to Ellinger (1964), there is widespread agreement about the type of environment which will be conducive to creativity. She lists "friendly, permissive, encouraging, supportive (p. 3)" as the most agreed-on characteristics. Bish (1965, p. 99) states that in a classroom environment hospitable to creativity "there must prevail a genuine regard for curiosity, for imagination and for the inquiring questioning mind. There must be a ready recognition of any accomplishment-however humble-that characterizes or promises creative productivity." Rogers (1961) lists psychological safety and freedom as the necessary prerequisites. Acceptance of the individual as of unconditional worth, and provision of a climate with much empathic understanding and little external evaluation are the criteria for a psychologically safe environment where creativity, he believes, will spontaneously emerge.

Gowan (1968) makes suggestions to parents who wish to provide a home environment conducive to creativity, and cites emotional support, permitting risk-taking behavior, showing respect for curiosity and initiative, heightening sensory awareness, and assisting in the development of a set of values as important variables. He recommends that parents "accept differences" and provide a home where "new ideas are respected not just tolerated (p. 339)." Gowan's comments could be applied with equal ease to classroom situations, as could the findings of Weisberg and Springer (1961) who discovered that the families of creative children were expressive but not dominating, accepting of regression, had family members who were independent of the family unit as a means of reinforcing their individual status.

In his consideration of the organizational variables which are most conducive to creative functioning of employees, Gibb (1973, p. 28) lists the following as desirable managerial behavior and attitudes: high trust, low fear, free flow of communication, clarity, open strategy and planning, allowing self-determination, allowing self-assessment, interdependence, and relying on intrinsic controls which are residual in the life processes. The climate which stifles creativity contains the opposite of these conditions: latent fear and distrust, a restricted flow of communication, and attempted imposition of motivation and control of behavior. When placed in generalized form these variables may be applied to any organizational setting including the classroom.

In creative problem solving strategies such as brainstorming (Osborn, 1957) and synectics (Gordon, 1961) attempts are made to establish an atmosphere which they believe to be maximally conducive to creativity. In both of these techniques the provision of a permissive

climate in which criticism and premature evaluation are ruled out has been a central issue.

Torrance (1965) concludes from his studies of the ways in which creative activity may be rewarded in schools that "the key concept is respect - respect for the questions and ideas of the child, respect for his right to reject after serious consideration, the adult's ideas in favour of his own (p. 252)." He states that to infuse the curriculum with creative activities is insufficient: to foster creativity the attitudes and values of the teacher and of the larger environment must reward creative behavior. In a later volume, Torrance (1970) states that an environment in which creativity may flourish must be responsive rather than just stimulating. The teacher must be able to respect and respond to the individual student's creative needs, such as the curiosity needs, the need to meet challenges and attempt difficult tasks, to become absorbed in a task, the need to be honest and search for the truth, and the need to be different and individual. Torrance strongly maintains that the application of these principles can be a powerful force in encouraging the development of creative potential as well as in the development of healthy human beings.

From Torrance's perspective, the question of how to foster creativity is altered to become a question of how to enhance the opportunities for self-actualization, how to cultivate and maximize growth toward fully functioning personhood. This is a point of view which Maslow (1971, p. 78) also espouses:

> ...the right climate, the <u>best</u> climate for enhancing creativeness would be a Utopia or Eupsychia...a society which was specially designed for improving the self-fulfillment and psychological health of all people.

Finally, after an extensive review of the available findings, Dellas

and Gaier (1970 p. 68) conclude "In brief, the roots of creativity do not seem to lie in convergent or divergent thinking but rather...in the personality and motivational aspects of character." This statement is supported by the more recent work of Cattell (1971, p. 443). Thus, the importance of the affective rather than the cognitive component of creativity is again stressed. When applied to the classroom, it might be inferred that the emotional climate of the classroom would strongly influence the development of creative functioning.

Teacher Characteristics: Important Determinants of Classroom Emotional Climate

Previous research has indicated that certain personality characteristics of teachers are influential in eliciting certain types of pupil behavior. Ryans (1960) has demonstrated significant relationships between teacher characteristics, teacher classroom behavior, and pupil behavior. Teacher characteristics were shown to be a major variable in determining the type of interaction which will occur in the classroom, and, hence, in establishing the emotional climate of the classroom.

From the bulk of opinion and evidence presented above, one point has been consistently reiterated: an environment which provides acceptance and empathic understanding of the individual and respect for the ideas he expresses will be an environment which fosters and encourages the emergence of the creative potential.

The teacher, as the major determiner of the emotional climate of the classroom must presumably, apply these principles of acceptance, empathy, and respect if creativity is to be encouraged. As Ojemann (1965, p. 82) has summarized

> The development of a respect for and an appreciation of a rich imagination requires that more emphasis be given to building a school environment in which teachers apply a more understanding approach in their daily interactions with children.

Foster (1971, p. 157) concurs, stating that since the teacher is a crucial variable in nurturing creative response, he or she must be capable of recognizing a creative response, and of providing an atmosphere where the individual is respected and genuine participation is encouraged. Anderson (1959) sees the role of the teacher who facilitates creativity as one of acceptance and stimulation of creative expression.

Barron (1973) further buttresses this contention with the idea that educating for creativity must begin with the teachers (p. 53)

> ...the classroom climate itself would be the crux of the matter. No amount of "technique" in teaching creative thinking would be effective without a general emotional climate favouring openness and experimentation. But the classroom environment reflects to a large extent the personality...of the teacher. Ergo, begin with the teacher!

If the foregoing excerpts from the literature can be relied upon, the conditions offered by the teacher which are of critical importance to the cultivation of creativity in students are the conditions which Truax and Carkhuff (1967) call the facilitative dimensions. These dimensions, called empathy, warmth, and respect are allegedly important in any interpersonal situation (Truax and Carkhuff 1967), including the classroom. The level of facilitative conditions which the teacher is able to offer, therefore, can be regarded as a major variable determining the type of interaction which prevails and the emotional climate which exists in the classroom (Truax and Carkhuff, 1967 p. 117).

The foregoing references strongly suggest that teachers who communicate high levels of empathy and warmth will provide emotional climates in their classrooms which are conducive to the development of creative potential; hence, teachers who are empathic and warm should foster creativity in their students. An empirical investigation of the relationships suggested by the previously mentioned writers will be undertaken in order to determine the validity of their claims, and to clarify such relationships if they do exist.

Definition of Terms

Creativity. This will be defined as the ability to produce solutions to problems (situations in which a response is required) which are appropriate to the demands of the problem and are relatively unusual in a given population of responses elicited by the same problem. This definition is based on Jackson's and Messick's (1965) two essential criteria for a creative product: uniqueness and appropriateness.

Creativity will be operationally defined as performance on two subtests of the Wallach-Kogan creativity measures (Wallach and Kogan, 1965), with the responses being evaluated in the manner used by Wallach and Kogan. A fluency score (total number of appropriate responses) and a uniqueness score (number of responses which are of very low frequency in the population) are derived.

Accurate Empathy Truax and Carkhuff (1967) describe accurate empathy as a sensitivity to the current feelings of another, and the ability to communicate this understanding in appropriate language. The accurately empathic person shows precision both in understanding and in communication of understanding. Through the use of words and the voice he demonstrates an appreciation for and sensitive awareness of

the kind and intensity of feelings being expressed by the second person, and the message "I am with you" is made unmistakably clear.

Nonpossessive Warmth Truax and Carkhuff (1967) define this as a deep respect for the rights of another and warm acceptance of him as a separate and unique individual with human potentialities. Nonpossessive warmth is not expressed in a selective, evaluative or conditional manner; the experience of another is accepted as being part of the other without imposing conditions wuch as "I'll accept you if you will behave as I wish". This does not mean that the first person is nonselective in reinforcing, sanctioning, or approving certain behavior or thoughts; however, nonpossessive caring is directed toward the person not toward his behavior, and is shown as a regard for the other as an individual whose experience has meaning and value.

Both accurate empathy and nonpossessive warmth will be defined operationally as rated performance on the Carkhuff Communication Index, open-ended version, which may be found in Appendix A.

Statement of the Problem

The problem to be investigated concerns the extent to which a classroom teacher's ability to communicate empathy and warmth is related to changes in the creativity of his/her students. An additional problem to be explored is the effect on changes in creativity which occur as a result of experiencing an open area team teaching school situation as opposed to the self-contained classroom set-up in which one teacher is responsible for one class.

Since neither a unified theoretical framework nor a back ground of empirical research is available to justify making a directional hypothesis regarding either the relationship of warmth-empathy variables

to creativity or the effect of open area versus self-contained classroom arrangements, it would appear appropriate to propose the null hypothesis of no differences between the comparison groups. The specific hypotheses to be tested may be stated as follows:

(1) There will be no significant difference between students of "high empathic" teachers and students of "low empathic" teachers in the amount of gain they manifest on a pre-post measure of creativity.

(2) There will be no significant difference between students of teachers obtaining higher scores on a non-possessive warmth scale and students of teachers obtaining lower scores on a non-possessive warmth scale in the amount of gain they manifest on a pre-post measure of creativity.

(3) There will be no significant difference between students taught in an open area team-teaching situation and students taught in a self-contained classroom in the amount of gain they manifest on a pre-post measure of creativity.

Limitations of the Study

Several limitations of this study should be recognized.

First, without authority or resources to obtain empathy and warmth measures on a large number of grade five teachers, then pre-select those who scored toward the extremes on these two dimensions, it appears questionable whether sufficient spread between teachers who are called "high" on either empathy or warmth, and teachers who are called "low" will be obtained. In the absence of such a spread, it would be difficult to know whether real differences in a teacher's classroom communication style exist.

Secondly, since the process of obtaining permission from school board, principals, and teachers to proceed with the project will not be obtained until the first part of October, many unmeasured student changes may occur before the pre-test is conducted.

Thirdly, certain reservations must be expressed concerning the validity of instruments used to assess empathy and warmth. The reasons

for these reservations are summarized within the Results section.

Thus, pratical difficulties which prevented the use of a more ideal research methodology, and the unavailability of well-researched, well-validated measures of empathy and warmth should be noted as circumstances which will limit the generalizability of the results of this study.

CHAPTER II

METHOD

This chapter will outline information on the subjects involved instruments used, and the design and procedure of the study. A review of the literature pertinent to the selection of measuring instruments is also included.

Subjects

Subjects were 434 fifth grade students (196 females, 238 males) and their 16 teachers (12 females, 4 males) from the Edmonton Public School System. Eight of the 16 teachers involved taught in a team teaching open area school situation, the other eight in a self-contained classroom. Subjects were chosen by the Service Research Department as being essentially comparable heterogeneous grade five groupings from areas of similar socio-economic level. The total number of schools involved was five.

Of the participating teachers, one had three years of university training, twelve had four years, two had five years, and one had a master's degree. Six of the 16 participants were between 25 and 35 years of age, eight between 35 and 45 and two were over 45. Years of experience ranged from none to twenty-three years, the mean being 8.56 years. All teachers involved stated that their home room classes were best described as heterogeneous groupings. The socio-economic status of the surrounding districts were all perceived by the teachers to be middle class. The participants unanimously agreed that the grade five level was their first preference as a teacher.

In self-contained classroom settings all those involved spent over 50% of their teaching time with their home room classes. All the team

teachers spent approximately equal amounts of teaching time with all the students in grade five who were tested.

Instruments

Creativity measures. The Wallach-Kogan (1965) creativity measures a copy of which may be found in Appendix B, were used to assess creativity. Two of the five subtests were chosen to yield an administration time of 75 minutes. The two subtests used were "Names" and "Similarities," both measures of what Wallach and Kogan call "verbal creativity." These two subtests were selected because they show the highest negative loadings (-.366 and -.289 for fluency scores for Names and Similarities, respectively; and -.272 and -.227 for uniqueness on Names and Similarities, respectively) on Cropley's (1968) Factor II, a substantial bipolar factor of intelligence versus creativity.

The creativity measures used consisted of four questions where the child was asked to generate possible instances of a class concept, for example, "Name all the round things you can think of;" and ten questions where the child was asked to generate possible similarities between two verbally specified objects, for example, "Write down all the ways in which a radio and a telephone are alike."

Reported reliability of the Wallach-Kogan creativity measures is very promising (Wallach and Kogan, 1965); however, no test-retest reliability figures have been published. Spearman-Brown split-half reliability coefficients on the Names and Similarities scores for both fluency and uniqueness variables were substantial (Names, fluency=.75, Names, uniqueness=.51, Similarities, fluency=.93, Similarities, uniqueness=.87). These coefficients indicate a high degree of internal consistency in each of the separate measures. Also, item-sum correlations for the Names and Similarities measures range from .67 to .85

for the fourteen different items. Thus, no item in either of the two measures stands out as being unrepresentative of what the measure as a whole assesses. This second scource of evidence again points to the high degree of internal consistency possessed by each measure. As Wallach and Kogan (1965, p. 44) note these high reliabilities make the demonstration of strong relationships of these creativity measures with other variables possible.

Wallach and Kogan (1965) have based the validity of their "creativity" measures upon their discriminant validity, that is, on the findings that they measure a dimension distinct from intelligence; on their face validity, in that they appear to measure the dimension of creativity; and, on their construct validity, in that they are logically derived from the associational conception of creativity developed by Mednick (1962), which states that the formation of associative elements or cognitive units into new combinations is the basis of the creative process.

The discriminant validity of the Wallach-Kogan battery is high (Wallach and Kogan, 1965; Crockenberg, 1972), as the measures exhibit a high degree of interrelatedness among themselves and a low degree of interrelatedness with IQ scores. This discrimination is maintained even when the measures are administered in written form (Cropley, 1968).

A recent study by Wallach and Wing (1969) was the first attempt to amass some data on the predictive validity of the battery. The authors report significant differences between high and low scoring college students on their academic achievement, but not on their non-academic achievement, that is, in areas requiring aesthetic or social skills.

It should be noted that the validity evidence on the Wallach-Kogan measures is far from conclusive, since the research studies so far have been done using only high ability students. Whether or not similar results would be obtained with a more heterogeneous selection of subjects is a question which has not been sufficiently investigated. In the interim, the use of the term "creativity" to describe the Wallach-Kogan measures should be done with the qualification that the validity of the instrument is still questionable. Other available instruments such as the Torrance test of creative thinking, and the Guilford battery of divergent thinking measures, however, are subject to similar and more extensive criticisms.

Measures of accurate empathy and nonpossessive warmth. A considerable amount of research evidence reviewed by Truax and Carkhuff (1967, pp. 80-143) indicates that empathy, warmth and genuineness are characteristics of therapeutic encounters which result in positive change. Other studies have shown that these dimensions may be crucial in other interpersonal situations such as the classroom. Truax and Tatum (1966) report that level of teacher empathy and warmth is significantly related to positive changes in the performance and social adjustment of preschoolers. Christensen (1960) has demonstrated a positive relationship between teacher warmth and student achievement in vocabulary and arithmetic. Diskin's (1956) study of student teachers showed that those who were high in individual empathy were best able to maintain harmonious interpersonal relations in the classroom. The academic achievement and gains in achievement of third grade and grammar school students are also significantly enhanced by teachers who function at a high level on the facilitative dimensions (Aspy, 1967;

Aspy and Hadlock, 1967). In summary, the effectiveness of many types of human encounters, from therapist-patient to teacher-pupil encounters, is significantly related to the level of facilitative dimensions offered by the helper.

As has been discussed in the Introduction, the literature strongly suggests that dimensions of the teacher's role which affect the possibility of creative development are accurate empathy and nonpossessive warmth. A written measure of the level of functioning on each of these two traits may be obtained through use of the Carkhuff Communication Index (Carkhuff, 1969, p. 94 ff.) and the Truax scales for the measurement of accurate empathy (Truax and Carkhuff, 1967, pp. 46-58) and of nonpossessive warmth (Truax and Carkhuff, 1967, pp. 58-68).

The Carkhuff Communication Index, a copy of which may be found in Appendix A, contains samples of standardized and representative client stimulus expressions which have been chosen to cover a wide range of problem areas. Greenberg (1968) and Antonuzzo and Kratochvil (1968) have established that there is a close relationship between the level of helper functioning as assessed by the written index and the level of functioning found in responding verbally to helpee stimulus expressions, and responding in the helping role. The most consistent results were found with high level communicators. Thus, the ability to respond at a high level to written stimuli is one which is generalizable to other "real life" situations.

Carkhuff (1969, I p. 109) notes that

> ...there is in general some tendency for the written responses of high level functioning helpers to receive lower ratings than the verbal responses of these helpers in interaction with the helpee...However, the prospective helpers who receive high ratings on the written form invariably receive high ratings on the helping interaction...In general, the written format for prospective

helper responses offers a satisfactory level of discrimination and an economic and efficient manner of collecting data.

The averaged ratings of responses on the sixteen stimulus expressions on the written form of the Carkhuff Communication Index were taken as the overall level of teacher functioning on these dimensions, in the manner previously used by Carkhuff (1969).

Truax and Carkhuff (1967, pp. 44-45) report twenty-eight studies using the Truax scales for the measurement of accurate empathy and nonpossessive warmth where inter-rater reliabilities had been calculated. The inter-rater reliability coefficients for the measurement of accurate empathy range from .43 to .95, and for nonpossessive warmth, from .48 to .95. Most often a moderate to high degree of reliability is obtained whether the measurement is of group or individual therapy. Test-retest reliability figures are still lacking.

Reported validity of the scales is founded mainly upon face validity and upon the research that indicates that high levels of functioning on the scales are related to positive therapeutic outcomes. This relationship is one strongly suggested by counselling theory if the scales measure what they purport to measure. The use of outcome studies to clarify or provide validations of the variable called "accurate empathy" has, however, been criticized by Rappaport and Chinsky (1972) who note that the existence of a positive correlation between outcome data and a particular variable does not establish either a causal relationship or an understanding of the variable. This criticism notwithstanding, reported studies do tend to indirectly support the Truax-Carkhuff contentions, since predicted results have been shown in the large majority of cases. However, validity data on the Truax scales for the measurement of accurate empathy and nonpossessive warmth must

be regarded as somewhat tentative.

The validity and reliability of the Truax rating scales have been challenged by Chinsky and Rappaport (1970) and Rappaport and Chinsky (1972). The use of repeated ratings of a small number of therapists may have caused reliability figures to be spuriously high since the observations are not independent of one another. In the calculation of reliability coefficients, number of therapists rather than number of patient-therapist interaction samples should be used to define the number of observations. Also, as has been noted by Campbell and Fiske (1959), a demonstration of both convergent and divergent validity has been generally regarded as necessary to establish the construct validity of a particular psychological assessment device. For the Truax rating scales this information is lacking.

Data cited by Rappaport and Chinsky (1972) suggest perhaps a more general evaluation of therapist quality is being represented by ratings of accurate empathy. This statement is supported by the work of Kiesler, Mathieu and Klien (1967) who found that ratings on accurate empathy "were heavily loaded with the rater's evaluation of the depth and genuineness of the therapist's more general commitment to the therapeutic relationship (p. 305)."

In conclusion the variable called "accurate empathy" seems to be rather confused, and the reliability and validity studies to date have failed to provide a strong basis for the use of this scale. Since the nonpossessive warmth scale was evaluated for reliability and validity by the same procedure (Truax and Carkhuff, 1967) similar shortcomings must be noted with regard to the research available on this scale. Hence, although the Truax scales and procedure for rating accurate em-

pathy and nonpossessive warmth must be recognized as tools with possible shortcomings, they were judged to be the most efficient and best researched devices presently available. The practical limitations of action-field research may to some extent justify the use of less rigorous procedures than are recognized as ideal. To assess empathy and warmth by more direct means, such as classroom observations, would simply have proved too time consuming and intrusive on classroom procedure to be practical. Furthermore, many of the same problems are inherent in the rating of behavior samples, as well as in the rating of written responses. Although reservations must be expressed concerning the results obtained with the use of these scales, and much more research will be necessary in order to conclusively demonstrate their validity and reliability, responses to the Carkhuff Communication Index, as rated on the Truax scales were chosen as the best available measures of teacher level of accurate empathy and nonpossessive warmth.

Biographical information sheet. A short biographical information sheet to be completed by the participating teachers was prepared by the author to obtain such relevant information as name, approximate age, number of years of university training, number of years of teaching experience, preferred grade level, proportion of teaching time spent with home room class, perceived socio-economic status of the area surrounding the school, and name of the district taught in. A copy of this sheet may be found in Appendix C. Administration was carried out in the same time period as the Carkhuff Communication Index. Information gained through using this instrument has already been summarized under the "subjects" section of this chapter.

Procedure

Initial contact with potentially participant schools was made by the Service Research Department of the Edmonton Public School Board after permission had been granted to proceed with the project. The author then contacted the principal and grade five teachers at each suggested school and sought the cooperation of these individuals. No difficulty was experienced in obtaining cooperation.

Beginning the third week in October, as early in the school year as turned out to be practically feasible, the students of the sixteen participating teachers were administered two subtests of the Wallach-Kogan creativity measure, Names and Similarities, a copy of the format used may be found in Appendix B.

The tests were administered to classroom groups in written form in a manner found to be effective by Cropley (1968). The Wallach-Kogan instructions were slightly modified by the author for this purpose. The students were asked to record their own responses on blank sheets of paper. The two sets of questions were also renamed "The What Else Is There Game" and "The Hidden Likeness Game," and the entire activity was presented in a manner as different from a test-like atmosphere as possible; however, talking and other distracting behavior as well as "copying" answers was discouraged. The students were told that they were participating in games, not tests, hence there would be many right answers to these questions, not just one. They were encouraged to think of many ideas, and to think of answers which no one else would arrive at. The total administration time was about 75 minutes, with ten minutes devoted to distributing papers and giving verbal instructions. This time period proved to be adequate for the large majority of the students, and resulted in little time pressure being imposed.

The teachers completed the Carkhuff Communication Index and a short biographical information sheet which are to be found in Appendices A and C, during the same 75 minute time block. Four of the sixteen teachers found the time insufficient to complete the Index, resulting in a maximum of seven incomplete responses out of a total of sixteen on the sixteen protocols. The teachers were not in the classroom during the time of the student assessment.

All administrations were conducted by the author, who was assisted by one or two other graduate students in the large classroom groupings. All verbal instructions were given by the same experimenter (see Appendix B).

Twenty to twenty-three weeks later, contact was re-established with the teachers and the creativity measures were re-administered to the students under the same conditions. Although the teachers did not have a task to complete on this occasion they were not present in the classroom during this administration. On this occasion too, all administrations were conducted by the author assisted by one or two other graduate students in the large classroom groupings.

An attempt was made to control certain variables such as pupil fatigue by conducting the second administration on the same day of the week, and at the same time of day as the previous administration; this was achieved in all but one case. One classroom of students received the second administration on the same day of the week, but in the morning rather than the afternoon.

The students were debriefed by being informed what part their participation had played in the total study. After the data was tabulated the teachers were contacted again and received feedback regarding changes in individual students and the part their participation had

played in the study.

The Carkhuff Communication Indices completed by the teachers were scored by two trained raters on the Truax scales of accurate empathy and nonpossessive warmth (see Appendix D). The responses to the Wallach-Kogan creativity measures were tabulated by the author. A frequency distribution of each response to each stimulus was prepared using all protocols from the first administration. Responses which occurred one per cent of the time or less, that is, which occurred less than five times in the 434 protocols, were called "unique" (Wallach and Kogan, 1965). The total number of responses given by one child to one stimulus were counted, yielding a fluency score for that item. Inappropriate responses, those which were judged to be either illegible or bizarre were not used as part of the uniqueness or fluency scores. Very few bizarre responses (those which bore no discoverable relationship to the stimulus) were encountered throughout the entire number of protocols.

A combined fluency score and combined uniqueness score for the Names and Similarities measures were obtained for each child. This method of summing scores is appropriate because of the high degree of internal consistency possessed by each measure, a statement based on the high item-sum correlations computed by Wallach and Kogan (1965).

All the protocols were then selected where the subject had completed or nearly completed the questions on both administrations. A protocol was called "complete" if all of the first four Names questions, and at least six of the ten Similarities questions had recorded responses. For each participating teacher, pre- and post-tests from ten students chosen at random were selected to participate in the following analyses.

On each variable, for example, Names-fluency, the student's score

from the first administration of the measure on the same variable was used as the covariate. The two teachers with the highest average empathy score across judges, and the two with the lowest scores were selected, and their students formed the two groups whose covaried scores on each variable, for example, Names-fluency, were compared. An analogous comparison was done using the students of the two teachers whose responses were rated as the most warm and the two whose responses were rated as the least warm as 'treatment' groups. These two analyses were done only on student and teacher results from those who were not involved in a team teaching situation.

A third analysis was carried out using the open area team teaching versus self-contained classrooms as the independent variables, and again using the students' scores on each variable on the first administration of the measures as the covariate on the post test scores.

CHAPTER III

RESULTS

Inter Rater Reliability

Using the Truax scales of accurate empathy and nonpossessive warmth, two judges rated the teacher responses on the sixteen items of the Carkhuff Communication Index. The reliabilities of these ratings were calculated using the method with adjustments for anchor points described by Winer (1971, pp. 289-298). The anchor point, in this case, was the main effect due to the judges. Thus adjusted reliability coefficients were obtained which indicate whether the judges ranked the responses in a similar order, or whether they tended to disagree as to which responses were high- and which were low-level.

For the ratings of accurate empathy on the sixteen items of the Carkhuff Communication Index, reliabilities ranged from .993 to .886 (see Table 1). For the averaged ratings of empathy for each teacher's responses to the sixteen stimuli, the reliability coefficient was .998.

The magnitude of these coefficients strongly suggests that the two judges were consistent in their estimations of which responses should be rated high and which should be rated low on the Truax scale.

For the ratings of nonpossessive warmth, the judges again showed a high degree of consistency as to which were judged high and which low on the Truax scale of nonpossessive warmth. Reliability coefficients (see Table 1) ranged from .943 to .752. For the averaged ratings of warmth for each teacher's responses to the sixteen stimuli,

the reliability coefficient was .988.

The high degree of consistency shown by the ratings indicates that confidence may be placed in these ratings as reliable measures of what Truax called accurate empathy and nonpossessive warmth.

Table 1

Inter Rater Reliability Coefficients[1] for Ratings of Empathy and Warmth on Sixteen Carkhuff Communication Index Responses and Averages for Sixteen Teachers[2].

	Empathy	Warmth
Response 1	.977	.911
Response 2	.98	.924
Response 3	.968	.891
Response 4	.993	.878
Response 5	.968	.930
Response 6	.966	.896
Response 7	.956	.943
Response 8	.886	.846
Response 9	.922	.893
Response 10	.989	.784
Response 11	.989	.807
Response 12	.962	.913
Response 13	.937	.796
Response 14	.976	.752
Response 15	.991	.917
Response 16	.993	.905
Average-all 16 R's	.998	.988

1 Winer, 1971 pp. 289-293
2 to the nearest 1/1000th

Open Area Team vs Self-Contained Classroom Teacher Differences

In order to determine whether teachers involved in team teaching as opposed to self-contained classroom teaching differed on ratings of accurate empathy and nonpossessive warmth, differences between means were tested for significance using the t statistic. Four separate t tests were carried out using average scores derived from each judges' ratings of the teachers' responses on each dimension (accurate empathy and nonpossessive warmth). For df of 14 and significance level of .05, none of the t's reached significance (see Table 2). Thus responses obtained from the two groups, open area team and self-contained classroom teachers, did not differ significantly on rated accurate empathy or nonpossessive warmth for either of the two judges.

Empathy Comparison

An analysis was done to compare the students of the two teachers with the highest average empathy scores across judges, and the two with the lowest scores. The students' covaried scores on the post test administration of the creativity measures yielded the dependent variables, and comparisons of changes on the Names-fluency, the Names-uniqueness, Similarities-fluency, Similarities-uniqueness, total fluency, and total uniqueness were made.

Analyses on each of these six variables showed that none of them were significant at the .05 level of confidence (see Table 3).

Thus, these analyses show no significant differences in gains on a creativity measure between the students of teachers who were the two lowest scorers of a group of eight on a measure of empathy, and the students of the two teachers whose scores were the highest. The data, therefore, provides no evidence for a rejection of the null hypotnesis.

Table 2

Open Area Team vs. Self-Contained Classroom Teacher Differences on Empathy and Warmth

	$\bar{X}$ open area, team	$\bar{X}$ self-contained	t
Empathy			
Judge 1	1.58	1.83	-1.255
Judge 2	1.41	1.55	-1.182
Warmth			
Judge 1	2.30	2.40	-0.288
Judge 2	2.05	1.66	0.925

Table 3

Analyses of Covariance[1] : Student Changes[2] on All Six Variables Representing Creativity
High vs. Low Empathy Teachers

Variable	Source	d.f.	Mean Square	F adjusted
Names - Fluency				
	Between	1	274.562	1.392
	Within	37	197.298	
Names - Uniqueness				
	Between	1	0.281	0.020
	Within	37	195.172	
Similarities - Fluency				
	Between	1	6.302	0.105
	Within	37	59.743	
Similarities - Uniqueness				
	Between	1	0.000	0.000
	Within	37	4.590	
Total Fluency				
	Between	1	367.363	1.151
	Within	37	319.157	
Total Uniqueness				
	Between	1	0.163	0.016
	Within	37	10.173	

1 Winer, 1971, pp. 752-775
2 to the nearest 1/1000th

Warmth Comparison

An analysis was carried out using the students of the two teachers with the highest average warmth scores across judges, and the two with the lowest scores. The students' covaried scores on the post test administration of the creativity measures yielded the dependent variables, and comparisons of changes on the Names-fluency, the Names-uniqueness, Similarities-fluency, Similarities-uniqueness, total fluency, and total uniqueness were made.

Analyses on each of these six variables showed that none of them were significant at the .05 level of confidence (see Table 4).

Thus, these analyses show no significant differences in gains on a creativity measure between the students of teachers who were the two highest scorers of a group of eight on a measure of warmth, and the students of the two teachers whose scores were the lowest. Again, there is no evidence for a rejection of the null hypothesis.

Team vs Self-Contained Classroom Comparison

It was noted earlier that team teachers' scores on accurate empathy and nonpossessive warmth and self-contained classroom teachers' scores on the same variables did not differ significantly. Therefore, it was possible to explore the question of whether a self-contained or a team teaching set-up would result in greater gains on the variables obtained through the use of the creativity measure.

Eighty students, randomly selected from the students of the eight team teachers and eighty students randomly selected from the pupils of the self-contained classroom teachers formed the two comparison groups.

Analyses on each of the six variables (Names-fluency, and so on) were significant at the .05 level of confidence in two cases out of six (see Table 5). On the Names-uniqueness variable, students from the

Table 4

Analyses of Covariance[1] : Student Changes on
All Six Variables Representing Creativity[2]
High vs. Low Warmth Teachers

Variable	Source	d.f.	Mean Square	F adjusted
Names - Fluency				
	Between	1	235.668	1.066
	Within	37	221.126	
Names - Uniqueness				
	Between	1	0.086	0.014
	Within	37	6.094	
Similarities - Fluency				
	Between	1	11.611	0.221
	Within	37	52.565	
Similarities - Uniqueness				
	Between	1	0.229	0.045
	Within	37	5.060	
Total Fluency				
	Between	1	388.187	1.064
	Within	37	364.999	
Total Uniqueness				
	Between	1	2.243	0.214
	Within	37	10.486	

1 Winer, 1971, pp. 752-775
2 to the nearest 1/1000th

Table 5

Analyses of Covariance[1] : Student Changes on
All Six Variables Representing Creativity[2]
Team vs. Traditional Classrooms

Variable	Source	d.f.	Mean Square	F adjusted
Names - Fluency				
	Between	1	214.586	0.515
	Within	157	416.282	
Names - Uniqueness				
	Between	1	139.770	5.932*
	Within	157	23.564	
Similarities - Fluency				
	Between	1	248.910	4.240*
	Within	157	58.709	
Similarities - Uniqueness				
	Between	1	2.741	0.572
	Within	157	4.789	
Total Fluency				
	Between	1	0.187	0.000
	Within	157	536.795	
Total Uniqueness				
	Between	1	63.684	2.148
	Within	157	29.650	

* significant at the .05 level of confidence

1 Winer, 1971, pp. 752-775
2 to the nearest 1/1000th

self-contained classroom setting showed considerably greater gains than those from a team teaching setting ($F=5.93$, $p=.016$). Conversely, on the Similarities-fluency variable, students from team teaching settings showed greater gains than did those from a self-contained classroom set-up ($F=4.24$, $p=.041$). The analyses on the other four variables showed no significant differences between groups.

CHAPTER IV

DISCUSSION

The present study failed to obtain data that would have resulted in a rejection of the null hypotheses, i.e., that there would be no significant difference in creativity gain between students of "high" and "low" empathic teachers and between students of "high" and "low" warmth teachers. The failure to detect differences on any of the six variables which made up the creativity measures fails to support a body of expert opinion on the alleged effects empathy and warmth have in developing creative potential. As was noted in the review of the literature, the hypothesis that empathy and warmth in the teacher-pupil interaction has a positive influence on creativity was based on a coincidence of opinion which was noted among a number of philosophers, psychologists, and educators who have devoted much of their energy to the study of creativity. However convincing the speculative arguments of these well-qualified individuals, no empirical evidence has yet been collected which can directly support the validity of their conclusions. While the present study cannot be considered a definitive one, the data do not support a relationship between teacher empathy-warmth variables and creativity gains in students. At this point, the relationship remains a speculative one with heuristic potential for the researcher in this area.

In considering the failure to demonstrate the relationship, several interesting conjectures may be relevant. It is conceivable that empathy and warmth are necessary but insufficient conditions for nurturing the creative instinct. In fact, by themselves such teacher

characteristics may produce the kind of permissive atmosphere which fosters passivity and an almost laissez-faire attitude on the part of the students. The writer wonders whether an additional factor of teacher (environmental) stimulation and challenge may also be a critical ingredient in the development of creative potential.

The level of teacher creativity may relate directly to this latter point of the need for stimulation as an important environmental condition. One immediately wonders about a possible modelling effect. The creative teacher would provide a model of a creative individual to be emulated by students. Many psychologists, including Dollard and Miller (1941), Mowrer (1960), and Bandura and Walters (1963) have claimed that much of a child's learning occurs through imitation. Bandura and Huston (1961) have shown that children who have had warm interactions with the model imitate her more than children whose interactions have been neutral or cold. Also, exposure to a model may produce more than the display of specific imitative behavior: it may also encourage the display of other behavior patterns belonging to the same general class (Lovaas, 1961). Thus, although teacher warmth and empathy should provide a situation where children will imitate the behavior patters of their teacher, the provision of an actual model of creative behavior may be necessary in order to enhance creativity in the children.

A further possibility that warrants mentioning has to do with the time element. Taken in perspective, five months of contact with a creativity-fostering teacher may simply not provide a strong enough influence to override the effects of factors that are not controlled, such as previous social history, home environment, peer group influence, the effects of the mass media, and so on. Undoubtedly school and teacher

can be powerful influential factors in a child's life but a much longer exposure in a rather ideal classroom environmental situation may be necessary for creativity changes to manifest themselves in a measurable way.

The comparison of team teaching vs. self-contained classroom teaching its effect on creativity was undertaken as an afterthought simply because the field situation in the schools assigned to the researcher imposed the two conditions. The writer had hoped to obtain 16 or more teachers teaching in the self-contained classroom situation from which to select the high and low empathy-warmth participants. The necessity of obtaining measures of creativity early in the school year, however, prohibited a further search for appropriate teacher subjects. As it was almost impossible to find elementary schools where team teaching was not a growing phenomenon, it was decided to live with the situation and to run a test for possible effects the two approaches may have on growth of student creativity. Differences in creativity occurred on only two of the six creativity variables and favoured the open area team classroom situation in one instance and the self-contained classroom situation in the other. In short, neither type of teaching can be stated to be superior to the other in terms of fostering greater gains on creativity measures. The results are certainly puzzling but more data would be necessary in order to make any serious attempt to explain them.

Implications for Future Research

Any future investigation of a teacher empathy-student creativity relationship should begin with a careful reappraisal of the instruments to be used. The apparent shortcomings of the Carkhuff Communication Index as an instrument which purports to tap the dimensions of empathy and warmth have been noted previously. Energy should be expended to

gain a more precise estimate of the validity of this instrument, or an alternative means of measuring empathy and warmth utilized.

Further, although the Wallach-Kogan creativity measures have a promising empirical base for claims of reliability, they are not as yet adequately validated. As previously noted, their discriminant validity or ability to measure a factor separate from intelligence has been established; however, issues such as convergent and predictive validity are still generally unexplored. Thus, it is evident that more psychometric information regarding the creativity measures used would render results on a future study more conclusive.

The technique by which high empathy and warmth and low empathy and warmth groups of teachers are designated should also be reconsidered in attempts to methodologically refine further research on this question. In the project being reported, choice of the two individuals scoring highest and two scoring lowest on either empathy or warmth did not result in much spread between the two pairs of teachers. Thus, although two teachers were termed "high empathy" and two "low empathy", there was very little numerical difference between them on the Truax scale (average difference: empathy .702; warmth .627). It is obvious that preselection of teachers whose average scores did show more variability would have been a preferable methodology, although not a practically feasible one for this study. In order to obtain a wider separation it might prove necessary to test a very large number of school teachers.

Future investigation into the present problem might prove more conclusive in its findings if the following changes were incorporated:

(1) Use classroom observation, and time-sampled teacher behavior as additional indicators of teacher empathy and warmth. Perhaps a writ-

ten index, similar to the Carkhuff Communication Index, but with content and situations more relevant to an elementary school teacher, could be developed and used in conjunction with the observations.

(2) Teachers should be preselected using the above methods, so the students of teachers who communicate at very different levels of empathy and warmth could be studied.

(3) Two parallel forms of the Wallach-Kogan creativity measures should be used for the pre-test and the post-test student evaluations. This would equalize the novelty effect more on the second administration. When the content of the questions was the same on both administrations, some of the more capable students stated that they remembered questions from their pre-test experience, and consequently were bored with the repetition.

(4) If it is practically feasible, the pre-test should be conducted within the first week of the school term and the post-test shortly before the end of the term.

Ideally, a longitudinal study should be done using preschoolers or beginners, and following the development of their creative potential throughout their school careers. These data could then be related meaningfully to teacher characteristics, the educational approach used, and other events in the child's life, such as the home situation. Such a longitudinal study, in addition to collecting a large amount of data on every subject, would allow the investigator to assess the predictive validity of some of the currently used creativity measures. In this way an in-depth rather than a superficial understanding of the environmental factors which affect the course of creative development might be gained.

In view of the vast importance of creativity in man's development, both as an individual and as a member of a species, further studies of

the creative process and the means by which this process may be enhanced certainly appear to be warranted. With rising awareness of the importance of the empirical study of this aspect of the individual's cognitive and conative make-up, it is hoped that future attempts to delineate and study the dimension of creativity will increase in rigour, in originality, in contribution to educational practice, and particularly to the development of more unified theory in the area.

CHAPTER V

SUMMARY

The importance of man's creative ability is a subject which has recently become a prominent one in the field of education. Educators have been criticized for a failure to cultivate this capacity in their students. Such an inclusive indictment of the educational system fails to reveal specific information about the conditions which will contribute to the development of creative potential.

Many individuals who have made a study of creativity have reached similar conclusions as to the type of situation in which it will flourish. Emphasis has been placed on certain characteristics of the emotional atmosphere as being crucial. The ideas which have emerged stress acceptance, warmth, understanding, and psychological safety as the characteristics of the emotional climate, either in the home, in the school, or in the industrial organization, which will be conducive to creative growth.

In attempting to delineate the characteristics in the school which will lead to fulfilment of the above conditions, it is evident that teachers are highly influential in establishing the emotional climate of the classroom. Many persons who have speculated on this subject contend that teachers who can establish warm, accepting, empatnic classroom atmospheres are teachers who foster creative growth. It follows from their arguments that an individual who possessed these qualities of empathy and warmth would be the teacher who would spontaneously establish such an atmosphere in the classroom, and who would foster creative growth in students.

Since the above position is speculative, the present study was designed as a test of the null hypothesis. It was proposed that students who are exposed to teachers who are high in "warmth" or in "empathy" and

students who are exposed to teachers who score toward the opposite end of the continuum would not show significantly different magnitudes of gain on the creativity measures. An exploratory investigation was also conducted to compare the effects of open area team teaching versus the self-contained classroom approach on creativity, when teacher empathy and warmth were statistically controlled.

Subjects were 434 grade five students and their 16 teachers from the Edmonton Public School Board. Eight of the 16 teachers were involved in a team teaching situation, eight were not. Subjects were chosen as being heterogeneous classes of grade five students from middle class areas.

Measures of empathy and warmth were obtained through use of the Carkhuff Communication Index, open-ended version, and the Truax scales. Teachers completed this written Index, and an information sheet, in October as their students completed the 75 minute creativity pre-test. The post-test of creativity was administered to the students approximately five months later, in late March or early April. The creativity measure chosen was a written form of two subtests of the Wallach-Kogan creativity measures, "Names" and Similarities." The pre-test and post-test creativity measures were identical. Testing was done by the experimenter in the students' regular classroom groupings.

Teachers' responses to the Carkhuff Communication Index were rated by two independent judges to yield an empathy and a warmth score for each teacher. Inter-judge reliability coefficients were found to be satisfactory.

The students' responses on the Wallach-Kogan creativity measures were assessed for fluency (total number of ideas) and uniqueness (number of ideas which occurred less than 1% of the time in the total sample). The responses from the 434 pre-test measures were used as norms. Scores

for fluency and uniqueness on the Names and Similarities subtests, and total fluency and uniqueness scores were obtained.

The *t* statistic was utilized to determine if open area team and self-contained classroom teachers differed on the dimensions of empathy and warmth. No significant differences were obtained.

An analysis of covariance was carried out to compare the gains in creativity of the students of the two self-contained classroom teachers who scored highest on empathy and the two who scored lowest. A similar analysis was carried out using the dimension of warmth. Covariates were the same student's scores on the pre-test creativity measure. No significant differences were obtained on either of these analyses.

The analysis of covariance which compared the team-taught to the one-teacher students showed significant differences on two of the six variables, but these differences were in opposite directions. Present data and theory are not sufficient to form any satisfactory explanation of these puzzling findings.

The present study casts doubt on the arguments of those who maintain that the nurturence of creativity in the classroom requires only empathy, understanding, and warmth on the part of the teacher. It is possible that other factors instead of or in addition to teacher empathy and warmth may be required. Such factors might include stimulation and challenge, the model of a teacher who is highly creative, or many other conditions.

Further research should strive for a more rigorous methodology, especially on such issues as choice of measuring instruments, and separation of teachers into "high" and "low" groups. After definitive studies, preferably longitudinal, have been conducted to answer basic questions, more detailed knowledge of the still hazy area of creativity may be sought.

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APPENDICES

APPENDIX A

The Carkhuff Communication Index

The teacher subjects were given three lines on which to write their responses to each of the following sixteen stimulus expressions. Space was also available for the subject to record the content of the stimulus, the feeling being expressed, and whether it was easy or difficult to compose a response.

Carkhuff Communication Index

Directions

The following excerpts represent 16 stimulus expressions; that is, expressions by a person of feeling and content in different problem areas. In this case the same person is involved in all instances.

You may conceive of this person simply as one who has come to you in time of need, for example, the person could be the parent of a student in your class. We would like you to respond as you would if someone came to you seeking assistance in time of distress. In formulating your responses keep in mind those that the person can effectively use in her own life. Write down your response after the number 1. Following each excerpt it might be helpful to you if you wrote down (2) the content of the person's discussion or the problem expressed and also (3) the emotional feeling that dominates the person's expression. Finally, (4) note those excerpts that have been most difficult for you to respond to.

In summary, formulate responses to the person who has come to you for help. The following range of expressions can easily come in the first contact; however, do not attempt to relate any one expression to a previous expression. Simply try to formulate a meaningful response to the person's immediate expression.

EXAMPLE: I am just not sure what to do or say. If I say what comes first to mind I might be criticized.

2. CONTENT: Person in state of indecision, confusion.

1. RESPONSE: One person replied: "What would you think and say first that you would be criticized on?" An alternative response would be "It would be very painful to be embarassed, or to have someone disagree with you."

3. FEELING: Worried, fear of embarassment.

4. EASY - or - DIFFICULT (This might be easy, difficult or neutral for you.)

NAME _____ DATE _____

COMMUNICATION ASSESSMENTS

Excerpt 1

Helpee: Gee, I'm so disappointed. I thought we could get along together and you could help me. We don't seem to be getting anywhere. You don't understand me. You don't know I'm here. I don't even think you care for me. You don't hear me when I talk. You seem to be somewhere else. Your responses are independent of anything I have to say. I don't know where to turn. I'm just so - doggone it - I don't know what I'm going to do, but I know you can't help me. There just is no hope.

Excerpt 2

Helpee: Who do you think you are? You call yourself a therapist! Damn, here I am spilling my guts' out and all you do is look at the clock. You don't hear what I say. Your responses are not attuned to what I'm saying. I never heard of such therapy. You are supposed to be helping me. You are so wrapped up in your world you don't hear a thing I'm saying. You don't give me the time. The minute the hour is up you push me out the door whether I have something important to say or not. I - ah - it makes me so God damn mad!

Excerpt 3

Helpee: They wave that degree up like it's a pot of gold at the end of the rainbow. I used to think that, too, until I tried it. I'm happy being a housewife; I don't care to get a degree. But the people I associate with, the first thing they ask is where did you get your degree. I answer, "I don't have a degree." Christ, they look at you like you are some sort of a freak, some backwoodsman your husband picked up along the way. They actually believe that people with degrees are better. In fact, I think they are worse. I've found a lot of people without degrees that are a hell of a lot smarter than these people. They think that just because they have degrees they are something special. These poor kids that think they have to go to college or they are ruined. It seems that we are trying to perpetrate a fraud on these kids. If no degree, they think they will end up digging ditches the rest of their lives. They are looked down upon. That makes me sick.

Excerpt 4

Helpee: It's not an easy thing to talk about. I guess the heart of the problem is sort of a sexual problem. I never thought I would have this sort of problem. But I find myself not getting the fulfillment I used to. It's not as enjoyable - for my husband either, although we don't discuss it. I used to enjoy and look forward to making love. I used to have an orgasm but I don't any more. I can't remember the last time I was satisfied. I find myself being attracted to other men and wondering what it would be like to go to bed with them. I don't know what this means. Is this symptomatic of our whole relationship as a marriage? Is something wrong with me or us?

Excerpt 5

Helpee: I'm so pleased with the kids. They are doing just marvelously. They have done so well at school and at home; they get along together. It's amazing. I never thought they would. They seem a little older. They play together better and they enjoy each other and I enjoy them. Life has become so much easier. It's really a joy to raise three boys. I didn't think it would be. I'm just so pleased and hopeful for the future. For them and for us. It's just great! I can't believe it. It's marvelous.

Excerpt 6

Helpee: I finally found somebody I can really get along with. There is no pretentiousness about them at all. They are real and they understand me. I can be myself with them. I don't have to worry about what I say and that they might take me wrong, because I do sometimes say things that don't come out the way that I want them to. I don't have to worry that they are going to criticize me. They are just marvelous people! I just can't wait to be with them. For once I actually enjoy going out and interacting. I didn't think I could ever find people like this again. I can really be myself. It's such a wonderful feeling not to have people criticizing you for everything you say that doesn't agree with them. They are warm and understanding and I just love them! It's just marvelous.

Excerpt 7

Helpee: I love my children and my husband and I like doing most household things. They get boring at times but on the whole I think it can be a very rewarding thing at times. I don't miss working, going to the office every day. Most women complain of being just a housewife and just a mother. But then, again, I wonder if there is more for me. Others say there has to be. I really don't know.

Excerpt 8

Helpee: Silence. (Moving about in chair)

Excerpt 9

Helpee: I'm really excited the way things are going at home with my husband. It's just amazing. We get along great together now. Sexually, I didn't know we could be that happy. I didn't know anyone could be that happy. It's just marvelous! I'm just so pleased, I don't know what else to say.

Excerpt 10

Helpee: I get so frustrated and furious with my daughter. I just don't know what to do with her. She is bright and sensitive, but damn, she has some characteristics that make me so on edge. I can't handle it sometimes. She just - I feel myself getting more and more angry! She won't do what you tell her to. She tests limits like mad. I scream and yell and lose control and think there is something wrong with me - I'm not an understanding mother or something. Damn! What potential! What she could do with what she has. There are times she doesn't need what she's got. She gets by too cheaply. I just don't know what to do with her. Then she can be so nice and then, boy, she can be as ornery as she can be. And then I scream and yell and I'm about ready to slam her across the room. I don't like to feel this way. I don't know what to do with it.

Excerpt 11

Helpee: He is ridiculous! Everything has to be done when he wants to do it. The way he wants it done. It's as if nobody else exists. It's everything he wants to do. There is a range of things I have to do. Not just be a housewife and take care of the kids. Oh no, I have to do his typing for him, errands for him. If I don't do it right away, I'm stupid - I'm not a good wife or something stupid like that. I have an identity of my own and I'm not going to have it wrapped up in him. It makes me - it infuriates me! I want to punch him right in the mouth. What am I going to do? Who does he think he is, anyway?

Excerpt 12

Helpee: I'm really excited! We are going to California. I'm going to have a second lease on life. I found a marvelous job. It's great! It's so great, I can't believe it's true - it's so great! I have a secretarial job. I can be a mother and can have a part time job which I think I will enjoy very much. I can be home when the kids get home from school. It's too good to be true. It's so exciting. New horizons are unfolding. I just can't wait to get started. It's great!

Excerpt 13

Helpee: I'm so thrilled to have found a counselor like you. I didn't know any existed. You seem to understand me so well. It's just great! I feel like I'm coming alive again. I have not felt like this in so long.

Excerpt 14

Helpee: I don't know if I am right or wrong feeling the way I do. But I find myself withdrawing from people. I don't seem to socialize and play their stupid little games any more. I get upset and come home depressed and have headaches. It seems all so superficial. There was a time when I used to get along with everybody. Everybody said "Isn't she wonderful. She gets along with everybody. Everybody likes her." I used to think that was something to be really proud of, but that was who I was at that time. I had no depth. I was what the crowd wanted me to be -- the particular group I was with.

Excerpt 15

Helpee: Gee, those people! Who do they think they are? I just can't stand interacting with them any more. Just a bunch of phonies. They leave me so frustrated. They make me so anxious, I get angry at myself. I don't even want to be bothered with them any more. I just wish I could be honest with them and tell them all to go to hell! But I guess I just can't do it.

Excerpt 16

Helpee: Sometimes I question my adequacy of raising three boys, especially the baby. I call him the baby -- well, he is the last. I can't have any more. So I know I kept him a baby longer than the others. He won't let anyone else do things for him. If someone else opens the door he says he wants Mommy to do it. If he closes the door, I have to open it. I encourage this. I do it. I don't know if this is right or wrong. He insists on sleeping with me every night and I allow it. And he says when he grows up he won't do it any more. Right now he is my baby and I don't discourage this much. I don't know if this comes out of my needs or if I'm making too much out of the situation or if this will handicap him when he goes to school -- breaking away from Mamma. Is it going to be a traumatic experience for him? Is it something I'm creating for him? I do worry more about my children than I think most mothers do.

APPENDIX B

The Wallach-Kogan Creativity Measures

THE WHAT ELSE IS THERE GAME

In this game you will see four different types of things written at the bottom of this page. It will be your job to name as many things as you can think of that are like each one. For example, you might read "things that hurt". Now you name all the things you can think of that hurt. You might say "falling down, fire, bruises, or a knife", or you might think of some things that are completely different from these. There are no wrong answers in this game. All of you will likely think of things which your friends do not write down.

Remember to write the number of the question you are doing on the answer sheet before you write down the names of the things you think of for that question. Do you see how to play? If you have some questions, ask the teacher. Now remember, name as many things as you can think of that are like the following. Take as much time as you like.

1. Name all the ROUND things you can think of.
2. Name all the things you can think of that MAKE A NOISE.
3. Name all the SQUARE things you can think of.
4. Name all the things you can think of that MOVE ON WHEELS.

Write the number of the question
and your answers on the answer sheet.

THE HIDDEN LIKENESS GAME

In this game you will see the names of two objects written after each number on the bottom of this page. It will be your job to think of all the different ways in which these two objects are alike. For example, try to think of some ways in which an apple and an orange are alike. You could say that they are both round, that they are both sweet, that they both have seeds, that they are both kinds of fruit, that they both grow on trees - things like that. You probably thought of other ways in which they are alike. There are no wrong answers in this game. All of you will likely think of things which your friends do not write down.

Remember to write down the number of the question you are doing on the answer sheet before you write down the ways those two things are the same. Do you see how to play? If you have some questions ask the teacher. Now remember, think of all the different ways in which the two things are alike. Take as much time as you like.

1. Write down all the ways in which a POTATO and a CARROT are alike.
2. Write down all the ways in which a CAT and a MOUSE are alike.
3. Write down all the ways in which a TRAIN and a TRACTOR are alike.
4. Write down all the ways in which MILK and MEAT are alike.
5. Write down all the ways in which a GROCERY STORE and a RESTAURANT are alike.
6. Write down all the ways in which a VIOLIN and a PIANO are alike.
7. Write down all the ways in which a RADIO and a TELEPHONE are alike.
8. Write down all the ways in which a WATCH and a TYPEWRITER are alike.
9. Write down all the ways in which a CURTAIN and a RUG are alike.

10. Write down all the ways in which a DESK and a TABLE are alike.

Write the number of the question
and your answers on the answer sheet.

APPENDIX C

The Biographical Information Sheet

Name _____ Date _____

Name of School _____

My age is _____ Under 25 _____ 25 to 35 _____ 35 to 45

_____ Over 45.

Highest level of formal education attained _____

Number of years of teaching experience _____

Grade(s) taught in current year _____

The grade level I am teaching presently is

_____ (a) my first preference

OR if you did NOT check (a), which of the following best describes you?

_____ (b) This is not my first preference, but I am satisfied with this grade level.

_____ (c) I really wish I could be teaching another age group.

The class I am teaching this term is

_____ (a) a homogeneous grouping _____ (b) a heterogeneous group

If the grouping is homogeneous, is it

_____ (a) average _____ (b) accelerated _____ (c) slow learners

_____ (d) other (specify) _____

I spend the majority of my teaching time with my home room class.

_____ Yes _____ No.

I would describe the socioeconomic status of the area in which I teach as _____ (a) high _____ (b) middle _____ (c) low

Community and district in which I teach (e.g. Edmonton, Allendale).

_____

APPENDIX D

The Truax Scales of Accurate Empathy and Nonpossessive Warmth

A Tentative Scale For The Measurement of Accurate Empathy

GENERAL DEFINITION

Accurate empathy involves more than just the ability of the therapist to sense the client or patient's "private world" as if it were his own. It also involves more than just his ability to know what the patient means. Accurate empathy involves both the therapist's sensitivity to current feelings and his verbal facility to communicate this understanding in a language attuned to the client's current feelings.

It is not necessary - indeed it would seem undesirable - for the therapist to share the client's feelings in any sense that would require him to feel the same emotions. It is instead an appreciation and a sensitive awareness of those feelings. At deeper levels of empathy, it also involves enough understanding of patterns of human feelings and experience to sense feelings that the client only partially reveals. With such experience and knowledge, the therapist can communicate what the client clearly knows as well as meanings in the client's experience of which he is scarcely aware.

At a high level of accurate empathy the message "I am with you" is unmistakable clear - the therapist's remarks fit perfectly with the client's mood and content. His responses not only indicate his sensitive understanding of the obvious feelings, but also serve to clarify and expand the client's awareness of his own feelings or experiences. Such empathy is communicated by both the language used and all the voice qualities which unerringly reflect the therapist's seriousness and depth of feeling. The therapist's intent concentration upon the client keeps him continuously aware of the client's shifting emotional content so that he can shift his own responses to correct for language or content errors when he temporarily loses touch and is not "with" the client.

At a low level of accurate empathy the therapist may go off on a tangent of his own or may misinterpret what the patient is feeling. At a very low level he may be so preoccupied and interested in his own intellectual interpretations that he is scarcely aware of the client's "being". The therapist at this low level of accurate empathy may even be uninterested in the client, or may be concentrating on the intellectual content of what the client says rather than what he "is" at the moment, and so may ignore or misunderstand the client's current feelings and experiences. At this low level of empathy the therapist is doing something other than "listening," "understanding," or "being sensitive"; he may be evaluating the client, giving advice, sermonizing, or simply reflecting upon his own feelings or experiences. Indeed, he may be accurately describing psychodynamics to the patient - but in the wrong language for the client, or at the wrong time, when these dynamics are far removed from the client's current feelings, so that the interaction takes on the flavor of "teacher-pupil".

STAGE 1

Therapist seems completely unaware of even the most conspicuous of the client's feelings; his responses are not appropriate to the mood and content of the client's statements. There is no determinable quality of empathy, and hence no accuracy whatsoever. The therapist may be bored and disinterested or actively offering advice, but he is not communicating an awareness of the client's current feelings.

STAGE 2

Therapist shows an almost negligible degree of accuracy in his responses, and that only toward the client's most obvious feelings. Any emotions which are not clearly defined he tends to ignore altogether. He may be correctly sensitive to obvious feelings and yet misunderstand much of what the client is really trying to say. By his response he may block off or may misdirect the patient. Stage 2 is distinguishable from Stage 3 in that the therapist ignores feelings rather than displaying an inability to understand them.

STAGE 3

Therapist often responds accurately to client's more exposed feelings. He also displays concern for the deeper, more hidden feelings, which he seems to sense must be present, though he does not understand their nature or sense their meaning to the patient.

STAGE 4

Therapist usually responds accurately to the client's more obvious feelings and occasionally recognized some that are less apparent. In the process of this tentative probing, however, he may misinterpret some present feelings and anticipate some which are not current. Sensitivity and awareness do exist in the therapist, but he is not entirely "with" the patient in the current situation or experience. The desire and effort to understand are both present, but his accuracy is low. This stage is distinguishable from Stage 3 in that the therapist does occasionally recognize less apparent feelings. He also may seem to have a theory about the patient and may even know how or why the patient feels a particular way, but he is definitely not "with" the patient. In short, the therapist may be diagnostically accurate, but not emphatically accurate in his sensitivity to the patient's current feelings.

STAGE 5

Therapist accurately respons to all of the client's more readily discernible feelings. He also shows awareness of many less evident feelings and experiences, but he tends to be somewhat inaccurate in his understanding of these. However, when he does not understand completely, this lack of complete understanding is communicated without an anticipatory or jarring note. His misunderstandings are not disruptive by their tentative nature. Sometimes in Stage 5 the therapist simply communicates his awareness of the problem of understanding another person's inner world. This stage is the midpoint of the continuum of accurate empathy.

STAGE 6

Therapist recognizes most of the client's present feelings, including those which are not readily apparent. Although he understands their content, he sometimes tends to misjudge the intensity of these veiled feelings, so that his responses are not always accurately suited to the exact mood of the client. The therapist does deal directly with feelings the patient is currently experiencing although he may misjudge the intensity of those less apparent. Although sensing the feelings, he often is unable to communicate meaning to them. In contrast to Stage 7, the therapist's statements contain an almost static quality in the sense that he handles those feelings that the patient offers but does not bring new elements to life. He is "with" the client but doesn't encourage exploration. His manner of communicating his understanding is such that he makes of it a finished thing.

STAGE 7

Therapist responds accurately to most of the client's present feelings and shows awareness of the precise intensity of most of the underlying emotions. However, his responses move only slightly beyond the client's own awareness, so that feelings may be present which neither the client nor therapist recognizes. The therapist initiates moves toward more emotionally laden material, and may communicate simply that he and the patient are moving towards more emotionally significant material. Stage 7 is distinguishable from Stage 6 in that often the therapist's response is a kind of precise pointing of the finger toward emotionally significant material.

STAGE 8

Therapist accurately interprets all the client's present, acknowledged feelings. He also uncovers the most deeply shrouded of the client's feelings, voicing meanings in the client's experience of which the client is scarcely aware. Since the therapist must necessarily utilize a method of trial and error in the new uncharted areas, there are minor flaws in the accuracy of his understanding, but these inaccuracies are held tentatively. With sensitivity and accuracy he moves into feelings and experiences that the client has only hinted at. The therapist offers specific explanations or additions to the patient's understanding so that underlying emotions are both pointed out and specifically talked about. The content that comes to life may be new but it is not alien.

Although the therapist in Stage 8 makes mistakes, these mistakes are not jarring, because they are covered by the tentative character of the response. Also, this therapist is sensitive to his mistakes and quickly changes his response in midstream, indicating that he has recognized what is being talked about and what the patient is seeking in his own explorations. The therapist reflects a togetherness with the patient in tentative trial and error exploration. His voice tone reflects the seriousness and depth of his empathic grasp.

STAGE 9

The therapist in this stage unerringly responds to the client's full range of feelings in their exact intensity. Without hesitation, he recognizes each emotional nuance and communicates an understanding of every deepest feeling. He is completely attuned to the client's shifting emotional content; he senses each of the client's feelings and reflects them in his words and voice. With sensitive accuracy, he expands the client's hints into a full-scale (though tentative) elaboration of feeling or experience. He shows precision both in understanding and in communication of this understanding, and expresses and experiences them without hesitancy.

A Tentative Scale for the Measurement of Nonpossessive Warmth

The dimension of nonpossessive warmth or unconditional positive regard, ranges from a high level where the therapist warmly accepts the patient's experience as part of that person, without imposing conditions; to a low level where the therapist evaluates a patient of his feelings, expresses dislike or disapproval, or expresses warmth in a selective and evaluative way.

Thus, a warm positive feeling toward the client may still rate quite low in this scale if it is given conditionally. Nonpossessive warmth for the client means accepting him as a person with human potentialities. It involves a nonpossessive caring for him as a separate person and, thus, a willingness to share equally his joys and aspirations or his depressions and failures. It involves valuing the patient as a person, separate from any evaluation of his behavior or thoughts. Thus, a therapist can evaluate the patient's behavior or his thoughts but still rate high on warmth if it is quite clear that his valuing of the individual as a person is uncontaminated and unconditional. At its highest level this unconditional warmth involves a nonpossessive caring for the patient as a separate person who is allowed to have his own feelings and experiences, a prizing of the patient for himself regardless of his behavior.

It is not necessary - indeed, it would seem undesirable - for the therapist to be nonselective in reinforcing, or to sanction or approve thoughts and behaviors that are disapproved by society. Nonpossessive warmth is present when the therapist appreciates such feelings or behaviors and their meaning to the client, but shows a nonpossessive caring for the person and not for his behavior. The therapist's response to the patient's thoughts or behaviors is a search for their meaning or value within the patient rather than disapproval or approval.

STAGE 1

The therapist is actively offering advice or giving clear negative regard. He may be telling the patient what would be "best for him," or in other ways actively approving or disapproving of his behavior. The therapist's actions make himself the locus of evaluation; he sees himself as responsible for the patient.

STAGE 2

The therapist responds mechanically to the client, indicating little positive regard and hence little nonpossessive warmth. He may ignore the patient or his feelings or display a lack of concern or interest. The therapist ignores client at times when a nonpossessively warm response would be expected; he shows a complete passivity that communicates almost unconditional lack of regard.

STAGE 3

The therapist indicates a positive caring for the patient or client, but it is a semipossessive caring in the sense that he communicates to the client that his behavior matters to him. That is, the therapist communicates such things as "It is not all right if you act immorally," "I want you to get along at work," or "It's important to me that you get along with the ward staff." The therapist sees himself as responsible for the client.

STAGE 4

The therapist clearly communicates a very deep interest and concern for the welfare of the patient, showing a nonevaluative and unconditional warmth in almost all areas of his functioning. Although there remains some conditionality in the more personal and private areas, the patient is given freedom to be himself and to be liked as himself. There is little evaluation of thoughts and behaviors. In deeply personal areas, however, the therapist may be conditional and communicate the idea that the client may act in any way he wishes - except that it is important to the therapist that he be more mature or not regress in therapy or accept and like the therapist. In all other areas, however, nonpossessive warmth is communicated. The therapist sees himself as responsible to the client.

STAGE 5

At stage 5, the therapist communicates warmth without restriction. There is a deep respect for the patient's worth as a person and his rights as a free individual. At this level the patient is free to be himself even if this means that he is regressing, being defensive, or even disliking or rejecting the therapist himself. At this stage the therapist cares deeply for the patient as a person, but it does not matter to him how the patient chooses to behave. He genuinely cares for and deeply prizes the patient for his human potentials, apart from the evaluations of his behavior or his thoughts. He is willing to share equally the patient's joys and aspirations or depressions and failures. The only channeling by the therapist may be the demand that the patient communicate personally relevant material.

APPENDIX E

Unique Responses on the Wallach-Kogan Measures

Unique Responses on the Wallach-Kogan Measures

Names

Question 1. Name all the ROUND things you can think of.

ashtray, atoms, arm, building, ball bearings, bed, bush, banjo, belt holes, battery, bench, burn, blueberry, binder rings, bug, buttonhole, barbeque, brush, bebe, bullet, bathtub, bomb, bruise, bracelet, barrel, berries, buckle (belt), barrette, book, burr, bingo chips, bald man's head, binoculars, bulbs, belt, basin, basketball hoop, bat, cannon barrel, chin, cat's stomach, croquet ball, croquet mallet, cymbals, canteen, card, crystal ball, rosy cheeks, cannon ball, cigar, cigarette, crown, candle, crabapple, collar, cage, cloud, cantalope, comet, chimney, calendar, clown's nose, coconut, comma, clams, cough drops, cork, corn, canes, crackers, cells, crater, cock, dirt lump, design, doll's head, dimple, dipper, disc, door, diamonds, drops, deep sea diver's mask, eye of needle, eye's iris, egg yolk, fan, fish bowl, fish eye, fish reel, fire place, flashlight, football, freckles, frame, fire grill, film strip, flying saucer, fat, film, gameboard, gooseberry, gun barrel, garbage can lid, galaxy, handle, hat box, hose, horses' hooves, hair brush, hair, hamburger, hill, helmet, horn, books, heels, house, hand grenade, holes in pencil sharpener, hoop, island, ice cream, igloo, ink well hole, jar rings, knees, knot hole, kettles, key ring, key, lime, leg, lock, lettuce, lamp shade, legs of a table or desk, lines of latitude or longitude, log, lipstick, monocle, marshmallow, mask, map, molecules, moles, microphone, merry-go-round, muffler, motor, meteor, moroccos, manhole, manhole cover, mobile, notebook, nerf ball, necklace, neck, number 8, onion ring, open area classroom, oval, owl eyes, paint brush,

patch, puff-ball, playing cards, pill, plug-in, pony tail holder, pizza, porthole, poppies, paper mache ball, pig's nose, pimple, ping pong ball, pen top, parachute, pod, peddle, pool cue, pomogranate, pearl, puzzle, pinwheel, pockets, pie plate, pillar top, plants, pine-apple, pump, propellor, pineapple rings, rain drops, rink, radish, ruler holes, room, raspberry, roll of paper, rope, road, rose bud, staircase, snowflake, string loop, shoe, starfish body, tree stumps, spots, shells, salt shaker, smoke ring, stadium, stove burner, smoke stack, scale, speaker, strawberry, saskatoon, seed, screw driver top, screen sink, snake, soap, scissors' top, signal light, stomach, snap, school, stars, Smarties, shoe laces, styrofoam ball, squash ball, soap holder, tire swing, soft ball, suitcase, stamp, thimble, t.v. screen, turtle shell, turnip, traffic lights, thermostat, toilet paper roll, toes, telephone dial, tennis racket, tail of rabbit, tits, thermos bottle, tambourine, telescope, toe nail, toys, wart, watermelon, worm, weed, water well, chocolate wagon wheel, water fountain, water tower, wine case, walker, washers, umbrella, vegetables, volley ball, zipper ring, yo-yo.

Question 2. Name all the things you can think of that MAKE A NOISE.

air conditioner, accordian, antelope, appliances, apple, ambulance, alligator, avalanche, axe, bones, beavers, buffalo, boiling, breathe or puff, beads, bowling alley, badger, bassoon, bass violin, blue bird, black bird, bottle stopper, burp, buggies, bike bells, box, bells-other, baseball games, bull, budgie, crunching, curtain, chipmunk, cheering, coat hangers, cage, cashier (cash register), caterpillar, cutting, com-pressor, clicks-taps, checkers, can opener, coo coo clock, cap guns, cities, crow, claws, chick-a-dee, circus, carnival, crane, clackers,

church bell, case, cricket, chains, cookie monster, camera, caveman, doorknob, dish washer, dragon, drawer, diver, dead leaves, dove, dialling 'phone, dice, dynamite, doll, drag races, dolphin, elbow, ear rings, electric wires, eagle, electric tooth brush, elevator, echo, elk, exercise wheel, floor, falling, fireworks, fingernails on the blackboard, floor polisher, fender chord, fish, freezer, flag, falcon, French Horn, fluorescent lights, fights, file, filing cabinet, flies, foghorn, falling star, fork lift, fishing rod, fixing things, farm, felt marker, furniture, fates, grader, games, go-kart, glasses-cups, garberator, gibson lead, garbage can, golf cart, grain auger, gnu, grill-cooking, gopher, giraffe, grasshopper, checks-hockey, head, harp, highway, hawk, hair, hummingbird, hoses, harmonica, hair dryer, hand grenade, hyenas, humming, houses, Indians, incinerator, ice (chipping), jet pack, jeep, jewelry, jageur, knocking, koala, knife-spoon-fork, kangaroo, keys, lock, lamp, leopard, lights, lizards, ladders, muffler, motor homes, milk, mosquito, music box, model cars, magpie, metal clamp, missile, mink, moth, moog, monsters, noise maker, nuts, oven door, oil drill, oxen, opening present, ocelot, pots-pans, parrot, peacock, pheasant, pool table, popcorn, pigeon, pump, parade, platypus, party, pipes, police cars, rubber band, races, runners, ruler, raccoon, rhino (hippo), rocking chair, rubber duck, rapids, skateboard, swather, stomach, saxophone, sparrow, skating, screen, stirring, sink, skidding car, steam engine, station, subway, submarine, stove, shower, snaps, snorting, sander, scissors, shovel, seal, skunk, sled, sewing machine, squeak, stick, sports, snow, stampede, sea gulls, stairs, sigh, swing, scythes, toaster, tea kettle, tap dancer's shoes, tuning fork, trailer, torpedo, tows, toad, trays, traffic, whisper, weasel, whales, wasps,

whip, windmill, waterfall, war, walrus, wood, walkie talkie, witch, vulture, ukelele, zoo, zebra, xylophone, yawning.

Question 3. Name all the SQUARE things you can think of.

amplifier, activity area, apartment, bread, billboards, butter, back (person), bookcase, bus, barrette, bell, bread box, blanket, briefcase, baseball base, biscuits, bucket, beads, bath tub, blindfold, china cabinet, courtyard, cement block, clasps, cabin, cape (poncho), couch, comic eyes watching t.v., cup, crest, comics, counter, cutting board, can, chest of drawers, cookies, caramel, chessboard, car roof, corral, camera, chocolate bar, closet, candle, checks, coat hanger, checkers, candy box, carton, cake pan, cereal, cart, crate, Charlie Brown's head, chimney, cover, cushion (pillow), curtains (drapes), computer, doilies, dryer, "D", door knob, dishwasher, dish rag, dice, drinking glass, ear rings, envelope, fan, furnace, folders, film, fabric, fridge, flower pot, feet, first aid kit, fasteners, graham wafer, garbage can, gum, gate, glove box, garage, gym., games, geometry set, garage door, heater (radiator), hallway, hole, hammer head, hand, hat, handle, hair brush, hinge, lock, lense, land, lamp, lid, jewelry, koala's nose, kite, kerchief, kleenex, magazines, moog, marionets, mask, meal, milk carton, mail box, monster face, machine, maze, name tags, nut, oven, package of cigarettes, plate (bowl or dish), painting, piece of tape, pencil sharpener, pencil, pamphlet, 'phone booth, polling booth, 'phone book, pendents, pillow case, presents, post, paper towels, portable, pool, piano, paint container, puppet theatre, puzzle, pineapple, pad, pot, pastry, pool table, razor, record jacket, roads, razor blades, robot, rectangle, raft, fink, silly putty, study carrel, shopping centre, scarf, stamp, sand box, stapler, steps (ladder), shirt, snow blocks, salt block, skylight, soap box, soap, store, soup case, stencil, stage, shoes, sidewalk, shells,

safe, sandal, spring board, snapshots, train car, toys, thermostat, trailer, tent, t.v. tables, table mats, toilet (old-fashioned), tape box, till in store, telephone, typewriter, tie, tool box, trampoline, toilet paper, towels, vice, vaccuum cleaner, weight, washer, wall paper, writing, wagon, yard.

Question 4. Name all the things you can think of that MOVE ON WHEELS.

ambulance, bulletin boards, bookends, back hoe, "bobcat", baler, boats on trailer, bulldozer, bicycle for two, chesterfield, china cabinet, circus, camera, cupboard, chuckwagon, cages, store clothes rack, covered wagons, cannon, chariot, caravan, carriage, conveyor belt, caterpillar, dish washer, dresser, desk, dicer, elevators, ferris wheel, float, fork lift, furniture, grader, gondola lift, goat cart, "gizmos", horse cart, house crusher, hand car, hover craft, hay loader, high boy, helicopter, ice cleaner, ladders, low boy, loaders, logs, mail box, merry-go-round, operating table, ox carts, pony cart, paint wheel, popcorn wagon, projector, pulley, pail (janitor's), paint tray, plow, paving machine, road sanders, rig, room divider, rolling pin, record player, rock picker, swather, street car, ski lift, subway, stools, space mobile, sign, shelf, spot light, street cleaner, snow plow, trolley car, typewriter, telephone, things on casters, thrasher, tray (serving), tape recorder, tire, tent-trailer, tow truck, vaccuum cleaner, washing machine.

<u>Similarities</u>

Question 1. Write down all the ways in which a POTATO and a CARROT are alike.

can buy them, need soil, need sun, can be eaten raw, can be buttered, have dirt on, grow in summer, stems, cooking produces softening, farms, letters in word, dints in them, good with roast, can store them, bite them, get rotten, iron, starch, long, mash, grind, sprout, taste bad,

taste (have one), useful, die, slice-cut up, salad, bumpy, make soup or stew, tops above ground, small, found at meals, no seeds, sweet, can hold them, important part of diet, can't eat leaves, cost, partly green, grow at same time.

Question 2. Write down all the ways in which a CAT and a MOUSE are alike.

move, skeletons, blood, hide, live on land, hard to keep, born, squeeze through small places, bones, bodies, play, hear, guts, get frightened, chase, skin, paws, grow, die, catch, soft, out of egg, bit rounded, have enemies, hate water, live outside, break wind, fight, wild, toes, hard to train, not good to eat, may be friendly, not eggs, can be a pest, have live babies, can scare you, steal things, can be mean, male and female, hard to catch, have fun, may live in barn, get into grouble, cute, backbones, triangle ears, like cheese, lips, tongue, climb, jump, sneaky, quiet, dumb, feed young milk, energy, dog chases both, found on farms, sharp nails, live in or out.

Question 3. Write down all the ways in which a TRAIN and a TRACTOR are alike.

back up or go forward, built, need oxygen, clutch, heavy, powerful, lights, stop, diesel, travel many miles, have controls, oil, grease, expensive, common, brakes, gears, long, don't drive in city, run on land, engine produces steam, go on street, square, key, steer them exhaust, on road, tracks, smoke stack, pollute.

Question 4. Write down all the ways in which MILK and MEAT are alike.

packaged, go into your mouth, give you energy, help you grow, fill stomach, four letters in word, taste awful, eaten hot or cold, feed for animals, iron, have taste, keep cold, calcium, expensive, cleaned, make

strong, set on table, from farm, calories, good for teeth.

Question 5. Write down all the ways in which a GROCERY STORE and a RESTAURANT are alike.

take all people, popular, trucks bring food, sell cigarettes, clean, money there, inside, rooms, sometimes prices are low, can be robbed, music, clocks, spend money, clerks, smells, can take food home, noise, manager, customers, useful, four walls, roof, windows, owner, business, people wait on you, have 'phone, tables, chairs, floors, stay in one place, lights, painted, same letters in name, cool, have water, have pop, order things.

Question 6. Write down all the ways in which a VIOLIN and a PIANO are alike.

hollow, color, built, in concert, have to be tuned, buy at music store, easily broken, practice, useful, strike them, ring, can change rhythm, letters in word, sing with them, relaxing, high and low sounds, move a thing to make the noise, touch to make a noise, need one person only.

Question 7. Write down all the ways in which a RADIO and a TELEPHONE are alike.

machine, modern convenience, speaker, built, transistor, bought/sold, means of talking, hear and send messages, tell forecast, touch them, guaranteed, news around faster, pick up and hold them, expensive, numbers, entertaining, receiver, loudness varies, not toys, square or rectangular, hear not see, in homes, turn thing means other people then speak, carry waves, messages from different sources, light weight, amazing, size, plastic, plug in, color, letters in word.

Question 8. Write down all the ways in which a WATCH and a TYPEWRITER are alike.

letters in word, knobs, man-made, built, bought/sold, have to help it go (operator), metal, work with them, no engine, fingers used, gears or wheels, not necessarily electric, hard to make, carry them, stop, run (work), read them, used in office, common, can be used when operator is small, set them, handy, need to be cared for, automatic, have parts, have springs, in home, used in schools, sounds in steady beat, made for special purpose, color, take them places.

Question 9. Write down all the ways in which a CURTAIN and a RUG are alike.

upholstery, letters in word, tangible, indoors, no heart, can walk on, taken off or put on, can hang both, warm, thick, keep dust out, furnishings, heavy, common, hide behind, can roll up, threads.

Question 10. Write down all the ways in which a DESK and a TABLE are alike.

letters in word, play on, don't make a sound, stand on, balanced, top, expensive, movable, heavy, banging on them makes noise, get dirty, on floor, sturdy, homework on, common, make things on, used in office, big (long), need dusting, steel, comfortable, in schools, at stores, may have designs, buy them, varnished, solid, not alive, furniture.